Chapter 12

Dentistry

Introduction

Dental caries is a transmissible infectious disease transmitted vertically (caregiver to child). It is the most prevalent chronic infectious disease of childhood. Early childhood caries is defined as decay that occurs within the first 71 months of life. Both the American Academy of Pediatric Dentistry and the American Academy of Pediatrics recommend the first dental visit at the time of the eruption of the first tooth and no later than 12 months of age (Figure 12-1).

	Primary Erupt	Permanent Erupt
Upper Teeth		
Central incisor	8–12 mo	7–8 y
Lateral incisor	9–13 mo	8–9 y
Canine (cuspid)	16–22 mo	11–12 y
First premolar		10–11 y
Second premolar		10–12 y
First molar	13–19 mo	6–7 y
Second molar	25–33 mo	12–13 y
Third molar		17–21 y
Lower Teeth		
Third molar		17–21 y
Second molar	23–31 mo	11–13 y
First molar	14–18 mo	6–7 y
Second premolar		11–12 y
First premolar		10–12 y
Canine (cuspid)	17–23 mo	9–10 y
Lateral incisor	10–16 mo	7–8 y
Central incisor	6–10 mo	6–7 y

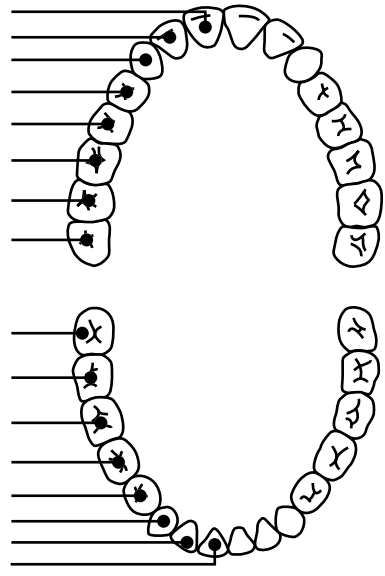

Figure 12-1. Tooth eruption.

Giving children juice and milk in no-spill "sippy" cups puts them at highest risk for developing tooth decay. Frequent consumption of snacks and drinks containing fermentable carbohydrates (eg, juice, milk, formula, soda) can also increase a child's caries risk. One of the main concerns surrounding dental caries in the pediatric population is lack of access to care.

Trauma

- Common in the pediatric population
  - The greatest incidence of trauma to the primary dentition occurs at 2–3 years of age, when motor coordination is developing
  - The most common injuries to permanent teeth occur secondary to falls, followed by traffic accidents, violence, and sports
- The history, circumstances of the injury, pattern of trauma, and behavior of the child and caregiver are important in distinguishing nonabusive injuries from abusive ones
- Treatment depends on the age of the patient, degree of cooperation, and type of tooth avulsed
  - Removal is indicated if it is determined that the displaced primary tooth has encroached upon the developing permanent tooth germ, unless the removal procedure in itself can further damage the permanent tooth germ
  - Deciduous teeth should **never** be replanted
    - When deciduous teeth are displaced from trauma, they often "re-erupt" in the correct position
    - Deciduous teeth may change color when displaced, but this is not necessarily indicative of their prognosis; they often return to their original color within 6–9 months
  - Patients must be monitored often for signs of infection (may present as a sinus tract on the gingiva, which may manifest soon after the injury or up to years later)
  - Avulsed permanent teeth reimplanted within the first hour have a greater chance of successful outcome; after that, the chance of complications increases
    - Because of the high likelihood that extensive treatment (eg, root canal, crowns, etc) will be needed following replantation, permanent teeth should only be reimplanted if the patient has access to good follow-

up care
    - Within the first couple of hours, the avulsed permanent tooth should never be scrubbed, but instead lightly rinsed with saline to remove debris and gently placed back in the socket
  - A splint made of flexible orthodontic wire (0.018 mm) bonded with composite can be used to "connect" this tooth to the adjacent teeth (if no bony fractures are present). The splint should remain in place for 7–10 days. If a bony fracture is present, use rigid fixation instead
  - Radiographs (occlusal and panoramic) should be taken at the time of injury to rule out any type of bony fracture or presence of tooth fragments in the soft tissues
  - Antibiotics should be given to the patient for 7–10 days following a traumatic avulsion
    - Administer amoxicillin if there is no soft-tissue involvement, cephalosporins if soft tissue is involved
    - Tetracyclines are contraindicated in the pediatric population
    - Antibiotic dosage is calculated based on milligrams per kilogram, and the ranges are similar to treatment of other infections

Common Oral Pathology

- Primary herpetic gingivostomatitis
  - Common in the first years of life
  - Causes many (10 to over 100) intraoral lesions
  - Patient is febrile, often dehydrated, and irritable
  - Antiviral medications are only effective in reducing the duration if given within the first few days of the outbreak
  - It is important to keep the patient hydrated; many times very young patients have to be admitted for dehydration resulting from primary herpetic gingivostomatitis
  - **Do not** give topical medications (eg, viscous lidocaine) to patients that are unable to expectorate; lidocaine overdoses have been reported (maximum dose is 4.4 mg/kg in a single treatment/day)
  - Palliative treatment includes acetaminophen and ibuprofen

- Patient should be encouraged to drink plenty of fluids
- Continue oral hygiene as thoroughly as possible
- Narcotics should be used cautiously

- Aphthous ulcers are easily distinguishable from primary herpetic gingivostomatitis because only a few lesions are generally present and patient is afebrile. Treatment is palliative
- Abscessed teeth
  - If tooth is not going to be or cannot be restored, extraction is the standard of care
  - Antibiotics are not indicated following infection control and extraction because the source of infection is no longer present. However, facial cellulitis occurs secondary to abscessed teeth and is common in children ages 2–5. Treat aggressively with IV antibiotics and tooth extraction

Fluoride

- Systemic fluoride supplementation should **only** be considered in children drinking fluoride-deficient water (< 0.6 ppm) and when a complete dietary history is available (Table 12-1)
  - Many areas with well water have natural fluoride
  - Well water must be tested prior to prescribing fluoride supplementation
  - The **lethal dose** of fluoride is 30–36 mg/kg
  - Over-the-counter toothpaste has approximately 1 mg of

Table 12-1. Recommended Fluoride Dosages According to Fluoride Ion Level in Drinking Water

	Fluoride Ion Level in Drinking Water (ppm*)		
	< 0.3	0.3–0.6	> 0.6
Age	**Amount of Fluoride to Prescribe**		
0–6 mo	None	None	None
6 mo–3 y	0.25 mg/day†	None	None
3–6 y	0.50 mg/day	0.25 mg/day	None
6–16 y	1 mg/day	0.50 mg/day	None

*1 ppm = 1 mg/L.
†2.2 mg sodium fluoride contains 1 mg fluoride ion.

fluoride per 1 inch

- Improper fluoride supplementation often leads to fluorosis of permanent teeth, which makes them more prone to dental decay
- Professional applications of fluoride, especially in high-concentration varnishes, have proven safe and effective for reducing dental caries